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AUTHOR Rice, Marion J.
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ABSTRACT

A model is presented which is designed to help curriculum developers prepare written pupil curriculum materials in the social studies. Helpful to teachers in presenting complex ideas from the social sciences in a direct and simple manner, the model consists of four major steps. Step I discusses the selection of major ideas and ways of placing them into a discipline framework. Curriculum content selection begins with outcome specification and is followed by the selection of content to achieve that outcome. Step II is an expository presentation of ideas in narrative form to clarify understanding of material. Benefits of this type of presentation are elaboration of the material to be developed, without the need for simplification; opportunity to check coherence and unity of conceptualization; and fuller explanation of the material to the teacher. Step III focuses on the selection of major ideas most critical for children's learning and recommends a review panel to facilitate judgment. Step IV explains how to rewrite curriculum material in a simpler format. Useful pointers for writing smoothly are given on the topics of deletion, syntax, vocabulary simplification, economy of expression, statements of generality and specificity, and content validation. (Author/DB)

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THE REDUCTION MODEL FOR PRE-COLLEGE CURRICULUM WRITING

by

Marion J. Rice
Director, Anthropology Curriculum Project
Director, Geography Curriculum Project
University of Georgia

Teachers as well as college professors who become curriculum writers for the elementary and secondary grades frequently become frustrated in translating abstract concepts and complex illustrations from the social sciences to a level suitable for young learners. Unlike publishing firms, which have the support of specialists in editorial work, illustration, graphic design, and layout, the school or college curriculum project is usually staffed by personnel motivated by enthusiasm but naive about the mechanics of curriculum development. Consequently, many projects only become relatively efficient toward the end of a grant period, with a consequent high ratio of cost to usuable materials. It is then too late to profit from past experience, because funds are no longer available to continue development. Even worse, from the standpoint of social studies, some new focus, priority, or concern often has emerged as a new matter of concern. The newly developed material is thus too often ignored. Since special curriculum materials seldom meet the K-12 sequence which still dominate--and are likely to continue to dominate print materials--curriculum project directors need to be concerned with curriculum efficiency not merely to increase productivity but also to bring materials to the market when there is relatively high interest in that particular topic, problem, or issue.

For some twelve years, two projects have been connected with the Department of Social Science Education at the University of Georgia--the Anthropology Curriculum Project and the Geography Curriculum Project. Outside funding for anthropology development terminated in 1969 and there was never outside funding for the Geography Curriculum Project. These two projects have continued because the emphasis was gradually shifted from curriculum development per se to research in curriculum development, utilizing graduate students. Since there is a constant turn-over in student writers-researchers, the problem of training in curriculum development as well as research is never ending. In the long experience with novice writers of pre-college material, some guidelines have emerged which appear to assist the writer with the developmental task.

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The purpose of this paper is to share these developmental prescriptions with others interested in curriculum development at the school and college level. The model we utilize is called simply a "reduction model" and is based on the notion of breaking complex ideas down into their component elements and presenting them in a direct and simple manner. The reader is cautioned that the process is not a science, and it is frequently more drudgery rather than art. The reduction model consists of four major steps--selection of major ideas, expository presentation of ideas in narrative form with examples, selection of major ideas most critical for children's learning, and re-writing of material in a simpler format. Each, in turn, consists of a series of substeps. Some brief attention is given to the relation of the reduction model to psycho-educational design.

INITIAL CONTENT SELECTION--THE DISCIPLINE FRAMEWORK

New material is developed with the explicit assumption that it will facilitate learning, either from the more judicious selection of content, or as a result of more effective presentation, or both. The first question is nevertheless "What do I want Johnny to know, believe, think, do, or behave after studying X (treatment)?"

Curriculum content selection thus theoretically begins with the classic process of outcome specification and then the selection of means (content) to achieve that outcome. (Here the step of preliminary needs assessment is bypassed on the assumption that a particular type of curriculum would not be envisaged had there not been some apriori determination of needs. Furthermore, needs assessment are hardly neutral, but are usually exercises in which justification is given to the course of action previously determined through subjective processes). As an actual matter, however, curriculum developers usually turn to the authoritative past literature for guidance in drafting objectives. Consequently, content--the existing knowledge, beliefs, and skills-always exercises a tremendous influence on the determination of objectives. The selection of learning outcomes is thus not linear, as

Objective ----------> Content,

but is a reciprocal relationship in which the interaction of objectives and content, as

Objective <----------> Content,

serve not only to elicit objectives but clarify content to attain those objectives.

To minimize waste effort at this initial point, it is important to keep the central question in focus "What do I want Johnny to learn?" Here the academician, or content specialist, can be most helpful in elucidating concepts and generalizations which he views as important. Although both the Anthropology and Geography Curriculum Projects have made extensive use of the "structure of the discipline" approach, structuralism has not been viewed as an end in itself, but from a functionalist perspective, i.e., the contribution a particular discipline makes to the enhancement of knowledge. Thus we tend to be eclectic and not purist in our approach--if our consultants or the literature show that concepts are useful and important, they may be initially embraced as falling within the discipline or the multi-disciplinary format, depending on the orientation. The issue of inclusion or exclusion will finally be determined on the basis of coherence and unity to the student learning tasks, not on the basis of discipline purity.

The first step thus concludes with a tentative selection of major ideas to be included in the new curriculum. It is important to understand that content selection is not final and conclusive, but is subject to modification as the curriculum writing progresses. Even when the initial selection culminates in an abstract model, the model itself usually undergoes change and refinement after the writing stage is initiated. Beginning with a focus related to specific learning outcomes, nevertheless gives direction to the initial step of writing.

This first step may be illustrated from a geography unit which is now in its formative stages. One of the significant phenomena in environmental and historical as well as geographic studies is man's differential impact on the use of his environment through time. Frequently the landscape is profoundly altered, so that the habitat in which man lives is more a product of the changes he induces than one given by nature. This conceptualization is expressed in college geography by the label "sequent occupance," the idea that, holding an area of land constant, changes in land use over time may be emphasized and used as a basis for global rather than local study. From initial reading, the investigator has determined that a strictly chronological approach, detailing all changes, would be impractical for middle grade school children, the target consumers, so that a cross sectional approach will be utilized that is, specific time periods will be utilized after critical changes have taken place in land usage to present, in bold relief, the nature of the change and to highlight the processes involved in that change. Here a pedagogical consideration has influenced content organization and selection. Now the task is to do a literature search of various geographic studies which can best typify processes of sequent occupance in different parts of the world. The search for content will thus influence the selection of the types of sequent occupance as well as the specific outcomes to be utilized. This project is in its exploratory stage. The investigator brings to his projected curriculum development knowledge of sequent occupance gained from a study of changing perceptions of the semi-arid grazing environment in New South Wales. He is not, however, a specialist in sequent occupance. Consequently, the attempt to define objectives and content will take place concurrently, as presented in our previous description.

EXPOSITORY ESSAY TO CLARIFY UNDERSTANDING OF MATERIAL

The second step is the writing of a narrative essay, in ordinary adult language, to develop the material. This step is useful in several ways: it permits an elaboration of the points of view to be developed, without interference of concept and sentence simplication; it provides an opportunity to check on the coherence and unit of the unit conceptualization; and, if corrected and published in an acceptable form, it can provide a fuller explanation of the material for the teacher. In the Anthropology Project, the early elementary units include a Teacher Essay, developed in this manner and published as background material for teacher use. In the Geography Project, this step has been utilized, but separate teacher essays were not published, to reduce unit production costs. Dr. Wilfrid C. Bailey, Co-Director of the Anthropology Project has sometimes made the distinction between the teacher essay and the pupil text as "teachereeze and pupileeze."

REDUCTION IN CONCEPT LOAD

The writing of the expository essay facilitates making judgment about the exclusion of content. The background or teacher essay inevitably indicates that some ideas, however desirable, will have to be dropped. There is no

firm rule in this respect. Typically, however, it will be found that the concepts are developed in clusters. Some judgment, therefore, must usually be made as to the simplification of the concept cluster. The best rule of simplification is "leave out," a rule particularly pertinent to sub-concepts and classifications. For example, the Anthropology Project has been criticized on many occasions of the fact that in addition to the concept of diffusion, there were also introduced the related concepts of primary, secondary, selective, and stimulus diffusion (See Concept of Culture, Pupil Text, pp. 46-47). The examples could have been given to illustrate examples of diffusion, without the need of trying to give them a distinct label, although the labelling did help to give a purpose to the use of the particular illustration.

One of the most difficult things for developers to do is to reduce their own product. It is therefore useful to use a review panel, sufficiently knowlegeable about the objectives and content to make decisions, but who have not been involved in the actual preparation of material. They can be given the charge. "We plan to use this material with X population (characteristics of consumers). What would you leave out?" It is important to stress leave out because it is inevitable that some suggestions will be made to put in.

After receiving recommendations to leave out and add, it is, of course, necessary to check the concepts, generalizations, and facts, against the unit objectives. It is, possible to rework objectives to fit content, and the loss of some ideas is frequently not of major importance. But sometimes what is left out destroys the integrity of the unit so that it cannot meet its objectives. In such a case, either the unit has to be reconceptualized, or the material which is recommended for deletion has to be reworked. In the process of developing cultural change material on Kenya, for example, a rather complex section had been written on the relationship of the emergence and development of political parties to the process of nationalism and independence. In this case, our reviewers recommended the deletion of this part of the material, a judgment in which we concurred. They did not question the quality of the material, but thought that the final material for pupils would be either too complex for adequate understanding, or simplified to the point of memoriter factual statements. So in this case, the rule or exclusion was followed, the target population being third and fourth graders. It was felt that the remaining material was adequate to develop the major ideas relating to cultural change in an independent state without the need for introducing a history of pre-independence political parties.

WRITING THE PUPIL MATERIAL

In writing material for pupils, the most difficult task is to write smoothly without having material read as a staccato series of simple sentences. In this part of development, it is assumed that the concepts, generalizations, and facts retained in the third screening step are to be utilized, but adapted to the learner, so that the task now is primarily one of simplification. These are a few useful pointers.

Deletion. The background material should be carefully examined, for coherence and unity. Does it explain and illustrate in such a manner that the ideas get across. If, in the process of deletion, the essay lacks coherence and unit, the material may need to be re-written in adult language.

Vocabulary simplification. The use of technical vocabulary inevitably seems to influence the writer to explain concepts in a technical manner. In order to be more precise and exact, the writer uses more formal language. The general rule is to retain the concept to be introduced, e.g., culture, but to explain the concept in simple language. Thus the writer can go through the definitions, explanations, and illustrations, and deliberately try to substitute simpler words. Again, the best person to do this is rarely the writer. The project editor, a colleague, or someone else can be asked to go through the material with the assignment "Find simpler words to explain, but without losing the essential sense and meaning to be conveyed." Vocabulary simplification is important to reduce reading level; and one of the components in reading difficulty formulas is the frequency of new words. However, word power and concept power are, for all practical purposes, synonymous. If all new words are eliminated, it is impossible to introduce new ideas. It is for this reason that grade level word lists are impracticable for vocabulary control. If you are introducing new ideas and subject matter, not reflected in the compilation from which the lists were derived, how can such a list be of any practical utility in guiding vocabulary selection? Thus the general rule is to retain the technical vocabulary, but to simplify words used to define, explain, give examples, and enlarge the key concepts.

Syntax. Another component in reading-difficulty computation is sentence length. Generally speaking, compound sentences are more difficult than simple sentences, and complex sentences, especially those with introductory dependent clauses, more difficult than compound sentences. Simple, direct sentences facilitate statements of definition, classification, and illustration. Long, compound sentences may often be made into two simple sentences. Complex sentences may be rewritten to eliminate dependent construction where it is not necessary. The result may not be as elegant, but often gives clarity. The result may be too monotonous and staccato; in such a case, paragraphs may need to be reconstructed to provide for a smoother flow.

Economy of expression. One problem in writing for children is verbiage--the use of sentences and words which add to the total length of material without contributing any ideas or serving as transitional sentences. Frequently, after language has been simplified and sentences abbreviated, non-working sentences will appear. Such sentences should be deleted. The purpose in reduction is not to send a telegram--a message can be so reduced that it communicates only to the sender who knows what has been eliminated. But reduction can result in a redundant message--one that restates the same idea without any elaboration or development. If this happens too often, children are expected to read material which does not add to the concept expansion.

Statements of generality and specificity. One of the most common ways to simplify material is to change factual statements, using specific data, into statements of generality, in which an assertion is made without evidence. In fact, many texts for primary children appear to consist of hardly more than general statements. The use of general statements reduces the amount of factual material to be learned. However, it is impossible for children to practice the art of inference and synthesis if they are merely given statements of generality to memorize. Synthesis is based on the evaluation of evidence--facts--and organizing them into a pattern of relationship through some kind of statement, which often involves the juxtaposition of abstract and concrete concepts. Consequently, the developers must weigh, in the final writing, the relationship of the intellectual process of learning to the specific goals of the unit under construction.

Content validation. Assume now that a draft of the pupil text has been written, and it appears to conform to the elementary principles of clarity, coherence, and unity. Does it do the job the developers intend it to do? Do the means facilitate the end, which is embodied in the unit objectives?

The eyeball rule is the only way we have ascertained to control content validity. In this respect, unit objectives are not nearly as valuable as unit questions, either of the short or long form type. If unit tests have not been prepared, based on the objectives, now is the time that such questions must be written. The question is more definite than the objective, and serves at this stage to measure the adequacy of the material. Can a child, having studied this material, answer the question? This answer can only be ascertained by using children in a pilot test, so the actual question at this stage is "Can an adult, using this material, answer the question?" This requires a member of the developing team to go through the questions and the content and ascertain the relationship of what has been written to the questions asked. If the answer is not clearly evident in the material to an adult reader, there are three things to do: (1) Drop the question, as being inappropriate. (2) Write material which specifically answers the question. Or, (3) Rewrite the question if the material prepared and the objective appear to be consistent and the idea behind the question at fault. Normally, a final summative test is constructed using item discrimination, so that there is a mix of difficult, medium, and easy items related to the key learning outcomes. The best way to be certain the items and content are understood is to talk with children after a test, and get explanations from them of why certain things were misunderstood. However, all too often material is pilot tested with children which cannot meet the unit objectives, as embodied in the tests, because of lack of material-test congruence, or content validity. Adult developers can minimize this problem by attempting to control content validity prior to pilot testing.

In this respect, it is recognized that outcomes of instruction can be embodied in activities which teachers and pupils are supposed to carry out and which are not written in the content of the text, but rather in directions to teachers. An analogous process of content control can be exercised, but it is much more difficult to monitor and is a matter which extends beyond the focus of this paper--a reduction model for writing curriculum materials for pupils. Test items based on curriculum material are assumed to be within the capacity of the pupil to learn, even when the teacher does not do anything about the particular item in class activities or discussion.

PSYCHOEDUCATIONAL DESIGN AND CURRICULUM MODELS

The term psychoeducational design has been recently applied to the construction of curriculum materials which embody some particular aspect of learning theory. Evaluations of inquiry, mastery, advance organizer, deductivly and inductively organized materials provide the social studies curriculum developer mechanisms to investigate the acceptability of some new materials, and the facilitative effects of some learning construct. The Anthropology and Geography Curriculum Projects have moved toward this direction in the recent construction of curriculum materials, and have conducted research relating to such different constructs as advance organizers and mastery learning. The reduction model described here for the writing of curriculum materials can be utilized in various psychoeducational designs and does not depend on any particular learning construct.

Terms such as learning construct, curriculum model, and teaching paradigm are neither precise nor mutually exclusive when applied to the process of curriculum development. We have used the term concept model to encourage curriculum writers to think in terms of systematically identifying what they are to write about. Use of the concept model is particularly useful in comparative writing where the variables or elements under investigation should by systematically treated in each chapter, notwithstanding change in topic. The development of a model frequently contributes to the clarity, coherence, and unity of the writing by providing for parallel treatment.

SUMMARY

This article has described the application of a reduction model to the preparation of written pupil curriculum materials. It is applicable to curriculum projects where one of the products in the development of materials which are to be placed in the hands of pupils to be read and studied. It is not applicable to curriculum projects in which the written product consists only of written instructions to the teacher, and the learning can take place only on teacher initiative and in interaction with the teacher.

Steps in the Curriculum Reduction Model are:

1. Select unit theme, topic, or problem
2. Identify objectives and related content
3. Write teacher background material
4. Compare material against objectives
5. Reduce content and objectives for pupils
6. Rewrite material for pupils
   a. Reduce vocabulary
   b. Reduce sentence length
   c. Use working sentences
7. Write test
8. Establish content validity
   a. Revise content
   b. Revise test

At this stage, the material should be ready for duplication and pilot testing.